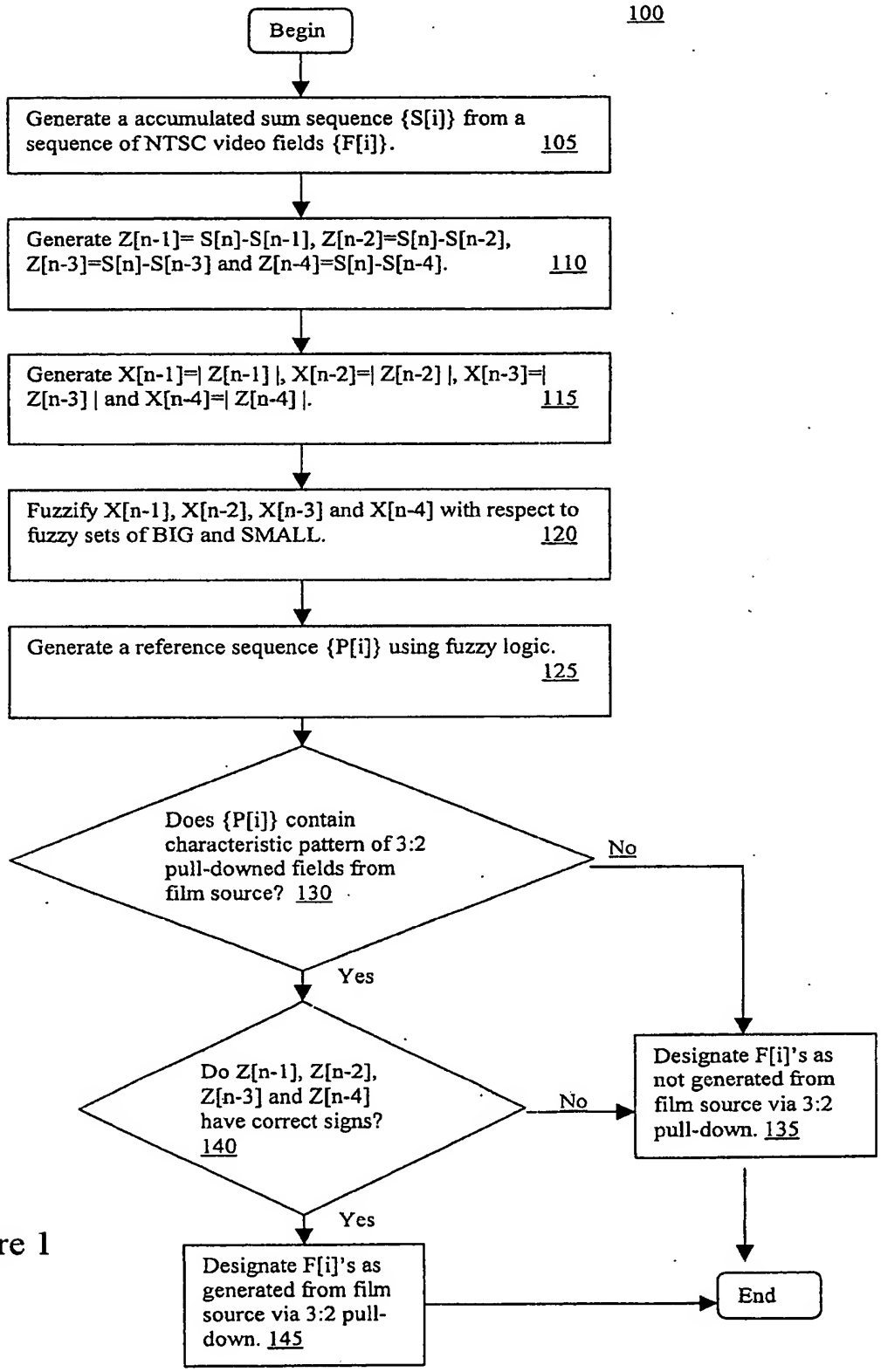
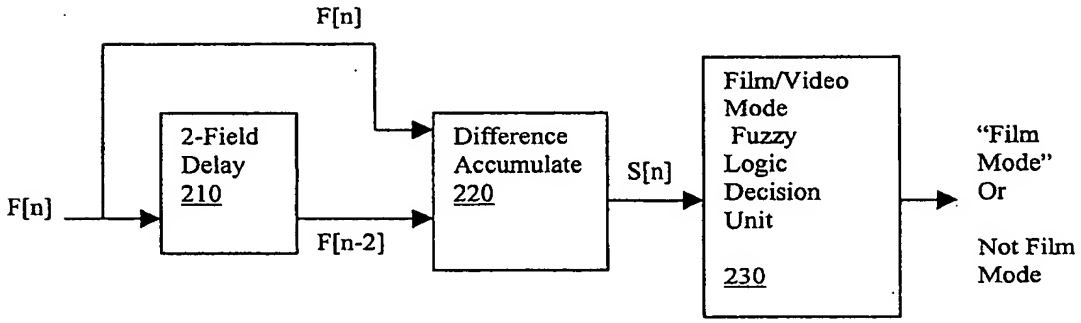

100
Begin
Generate a accumulated sum sequence {S[i]} from a sequence of NTSC video fields {F[i]}. 105
Generate Z[n-1]= S[n]-S[n-1], Z[n-2]=S[n]-S[n-2], Z[n-3]=S[n]-S[n-3] and Z[n-4]=S[n]-S[n-4]. 110
Generate X[n-1]=| Z[n-1] |, X[n-2]=| Z[n-2] |, X[n-3]=| Z[n-3] | and X[n-4]=| Z[n-4] |. 115
Fuzzify X[n-1], X[n-2], X[n-3] and X[n-4] with respect to fuzzy sets of BIG and SMALL. 120
Generate a reference sequence {P[i]} using fuzzy logic. 125
Does {P[i]} contain characteristic pattern of 3:2 pull-downed fields from film source? 130
No
Yes
Do Z[n-1], Z[n-2], Z[n-3] and Z[n-4] have correct signs? 140
No
Designate F[i]'s as not generated from film source via 3:2 pull-down. 135
Yes
Designate F[i]'s as generated from film source via 3:2 pull-down. 145
End

Figure 1


F[n]
2-Field
Delay
210
F[n]
F[n-2]
Difference
Accumulate
220
S[n]
Film/Video
Mode
Fuzzy
Logic
Decision
Unit
230
"Film
Mode"
Or
Not Film
Mode

200

Figure 2

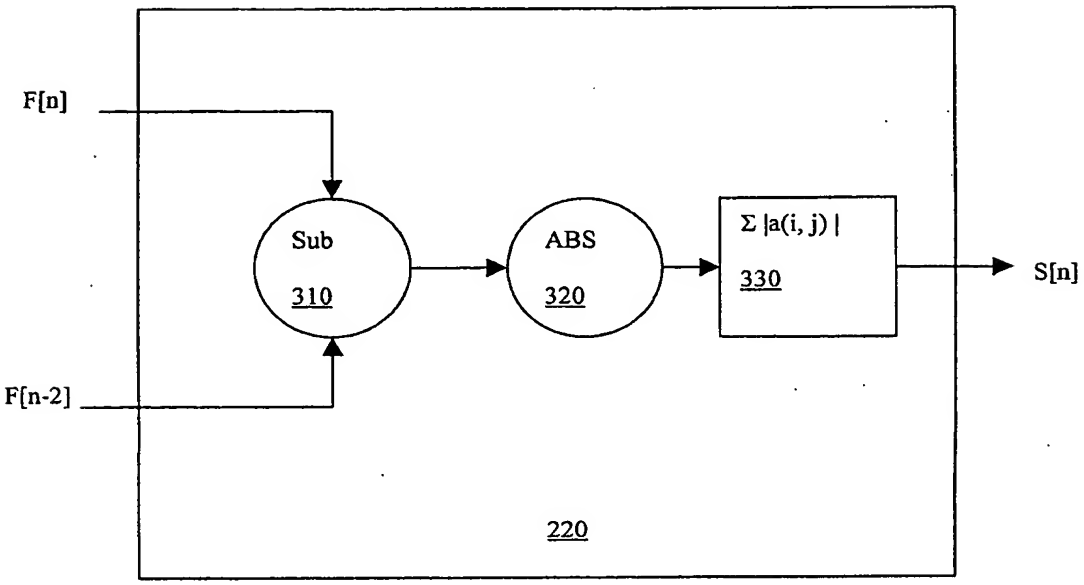


Figure 3

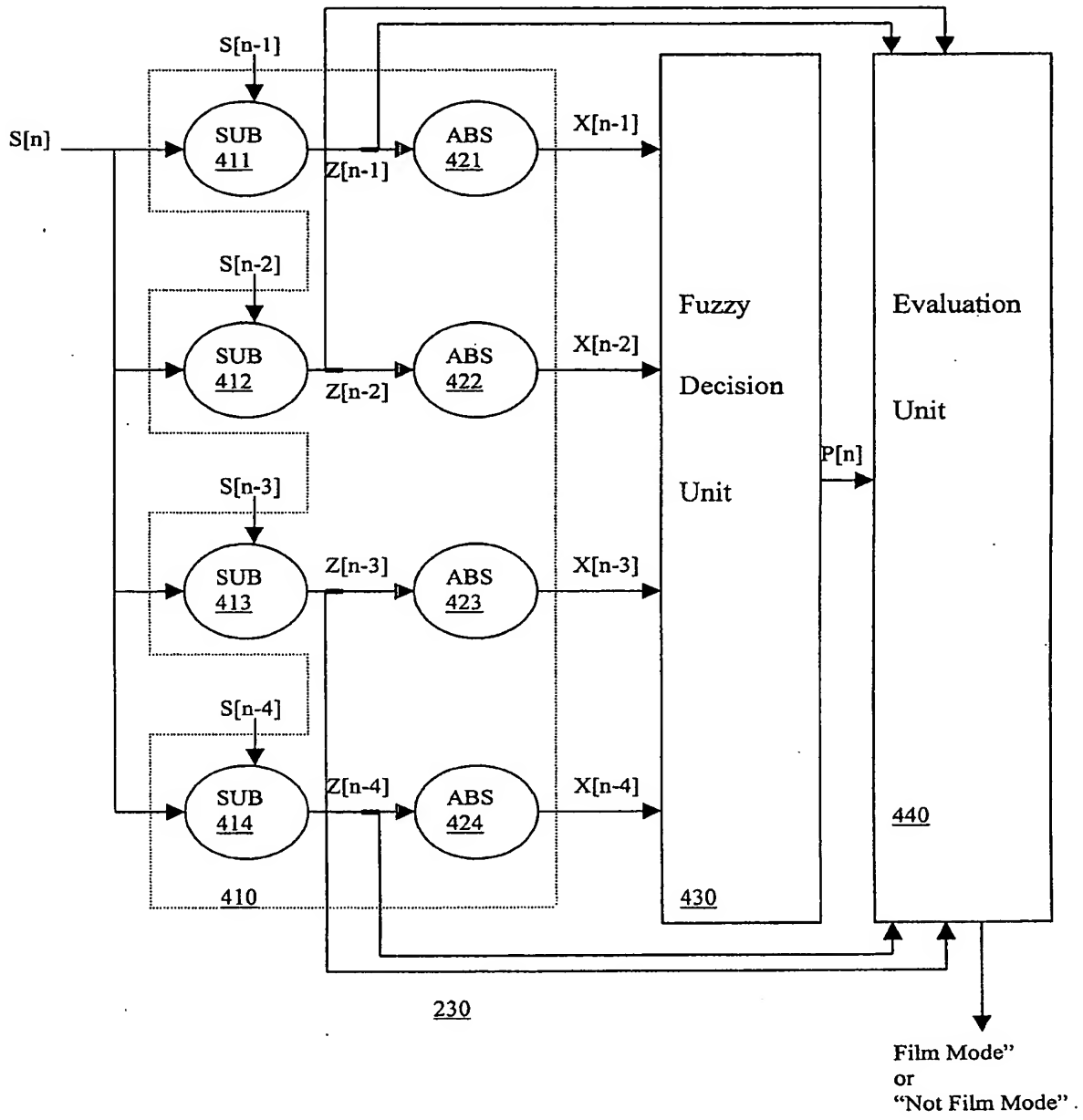
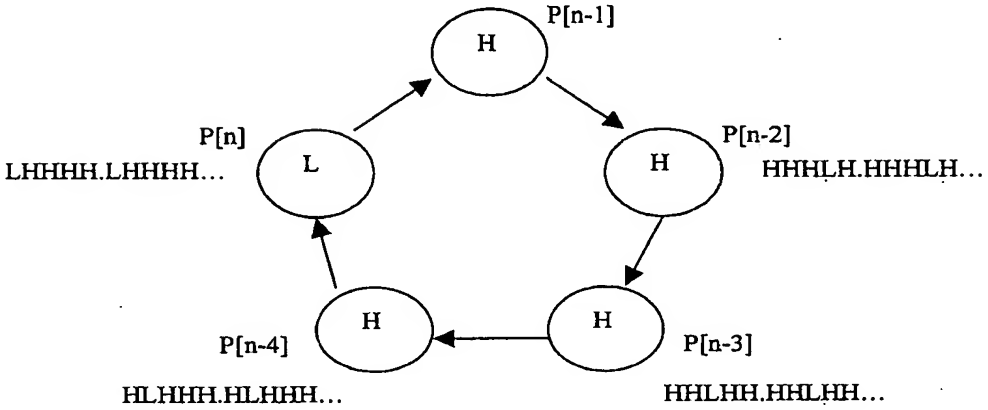

S[n-1]
S[n]
SUB
411
ABS
421
X[n-1]
Z[n-1]
S[n-2]
SUB
412
ABS
422
X[n-2]
Z[n-2]
Fuzzy
Decision
Unit
P[n]
Evaluation
Unit
S[n-3]
SUB
413
Z[n-3]
ABS
423
X[n-3]
S[n-4]
SUB
414
Z[n-4]
ABS
424
X[n-4]
440
410
430
230
Film Mode"
or
"Not Film Mode"

Figure 4

HHHHL.HHHHL...



510

For k ε {0, 5, ..., 5(m-1), 5m} wherein m is a positive integer,
{
If (P[n +k], P[n-1 +k], P[n-2 +k], P[n-3 +k], P[n-4 +k])
Is (L , H , H , H , H), and
If Z[n-1+k], Z[n-2+k], Z[n-3+k], Z[n-4+k] have correct signs,
}

Then designate {F[j]} as 3:2 pull-downed video fields from film source.

500

Figure 5